

U.S. Department of the Interior
Bureau of Land Management
White River Field Office
73544 Hwy 64
Meeker, CO 81641

ENVIRONMENTAL ASSESSMENT

NUMBER: CO-110-2004-184-EA

CASEFILE/PROJECT NUMBER: COC 68010

PROJECT NAME: Shell hydro-geologic test sites

LEGAL DESCRIPTION: Sixth Principal Meridian, Colorado
T 1S R. 98W
sec. 31; NENE, NWSW, SWNE
T 2S R. 98W
sec. 6, SENE;
T 1S R 99W
sec. 36, SWNE;
T 2S R 99W
sec. 1, NWSW

APPLICANT: Shell Frontier Oil and Gas Inc.

ISSUES AND CONCERNS (optional):

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES:

Background/Introduction: Shell Frontier Oil and Gas Inc (Shell) have been actively conducting studies in the Piceance Creek Basin since 1982. A northern basin study, which included the drilling of core holes and hydrology holes, is being completed under Land Use Permit COC67069. Well logs for the completed holes have been given to the White River Field Office. Hydrology and analysis information shall also be reported prior to issuance of further permits. COC67069 expires December 31, 2006. Previous data collection was authorized under COC64011 and COC65741.

This application is for a new 3 year Land Use Permit for an expansion of Shell's existing data gathering programs. There is significant lack of information on the lower water bearing units of the Green River Formation. The only practical methodology for securing additional data is through additional drilling and testing. Previous studies in the area have focused on the upper

water bearing zones. The areas below the B Groove such as the L5 through the L1 will be included in this study.

Proposed Action: Shell proposes to build 5 new well pads to drill one oil shale core hole and 6 hydrologic monitoring wells per pad. A sixth pad which has been previously permitted and constructed with one core hole is proposed to have an additional six hydrologic monitoring wells. All of the pads will have a total of 7 holes per pad; one being a core hole and the others hydrologic monitoring wells.

Access would follow existing roads where possible, with 3.57 miles of new road to be constructed. Roads will have approximately 12 feet wide travel surface. Crossings will be typical dry creek crossings and cutouts will be used to divert runoff water. Culverts will be used only if necessary. A culvert of at least 36" diameter should be installed where the proposed access to Location 18-6-298H crosses Stake Springs. Road upgrading will not be permitted during muddy or adverse weather conditions. An approved paleontologist shall be on site during construction of the road to well pad 18-6-298. If necessary, dust control shall be provided by watering the roads/locations. Access for surveying will be by existing road or by foot. There would be daily travel during the first period of hydrologic monitoring.

Pads would range from 1.2 to 1.3 acres each. Locations and pits shall be fenced. Pits shall not be lined or covered. Pit size will depend on amount of water found at each site but would be up to 2 pits per pad at a maximum of 15 feet with 2 feet of freeboard. An alternative method of water disposal would be by sprinkler system and evaporation. Construction procedures shall take place as outlined in the application attachment. The location of the 4-1-299 pad is an existing location and one hole has been drilled.

Shell is attempting to minimize the extent of the program by keeping road and site location construction to a minimum and still maintain a safe workspace. Shell will modify its program to meet the recommendations of the Bureau as necessary. Roads could be gated to minimize travel. Pads and access roads will be rehabilitated as described in the drilling plan attached to this application. New disturbed area would be 7.3 acres for locations and approximately 12.98 acres for roads, totaling 22.4 acres.

No Action Alternative: Roads and pads would not be built and test holes would not be drilled.

ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD: The access route to well pad #19-36-199 could have gone directly from the NE from RBC Rd 24. The slightly longer route from entering the location from the SW was chosen to avoid direct access from the paved County Road.

NEED FOR THE ACTION: The applicant has requested authorization to drill multiple wells on pads for hydrologic and geologic data collection.

PLAN CONFORMANCE REVIEW: The Proposed Action is subject to and has been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

Name of Plan: White River Record of Decision and Approved Resource Management Plan (ROD/RMP).

Date Approved: July 1, 1997

Decision Number/Page:

Decision Language: “To make public lands available for the siting of public and private facilities through the issuance of applicable land use authorizations, in a manner that provides for reasonable protection of other resource values.”

**AFFECTED ENVIRONMENT / ENVIRONMENTAL CONSEQUENCES /
MITIGATION MEASURES:**

STANDARDS FOR PUBLIC LAND HEALTH: In January 1997, Colorado Bureau of Land Management (BLM) approved the Standards for Public Land Health. These standards cover upland soils, riparian systems, plant and animal communities, threatened and endangered species, and water quality. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands. Because a standard exists for these five categories, a finding must be made for each of them in an environmental analysis. These findings are located in specific elements listed below:

CRITICAL ELEMENTS

AIR QUALITY

Affected Environment: There are no special designation air sheds or non-attainment areas nearby that would be affected by the proposed action. During periods of low precipitation, air quality in the area of the proposed action is often diminished by dust caused by human disturbance.

Environmental Consequences of the Proposed Action: The proposed action would result in short term, local impacts to air quality during and after construction, due to dust being blown into the air. After adequate vegetation is reestablished, blowing dust should return to pre-construction levels.

Environmental Consequences of the No Action Alternative: No increase in dust will occur.

Mitigation: Require water spreading on the road surfaces to control fugitive dust and to help minimize short-term impacts.

CULTURAL RESOURCES

Affected Environment: The proposed well pads and access roads have been inventoried at the Class III (100% pedestrian) level (Conner et al 2004, Compliance Dated 8/9/2004) with four previously reported sites, four new sites and four new Isolated Finds reported in the inventory area. One previously reported site could not be relocated during field inventory.

Environmental Consequences of the Proposed Action: The proposed action will impact at least three of the sites identified during inventory (5RB 124, 5RB 125 and 5RB 538). It is possible that the project will impact an additional site (5RB 4647) if efforts to avoid the site are not successful.

Environmental Consequences of the No Action Alternative: There would be no new impacts to cultural resources under the No Action Alternative.

Mitigation: 1. Access road to wells 16-31-198H and 14-31-198H (and by extension of course 15-31-198H): Sites 5RB 125, 124 and 4801 are plotted as being directly impacted by road construction. Therefore, sites shall be monitored during the construction process to ensure that subsurface features are not overlooked given the uncertainty in the inventory report regarding whether there is sufficient soil depth for buried remains. Site 5RB 4801 must be avoided by a minimum of 50 feet or a comprehensive testing program to determine eligibility must be undertaken, and any mitigation if necessary prior to the construction of the road.

2. Access road from well pad 4-1-299 (2-2-299) to well pad 17-36-199H: Every effort must be made to avoid any impacts to site 5RB 4647 in its entirety. Due to the significant expansion of the site boundaries of site 5RB 538 and the uncertainty as to whether subsurface remains are present based on findings of artifacts in ant hills all construction through the site shall be monitored.

3. Well pad 17-36-199H shall avoid site 5RB 4802 by at least 100 feet.

4. The operator is responsible for informing all persons who are associated with the project operations that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during any project or construction activities, the operator is to immediately stop activities in the immediate area of the find that might further disturb such materials, and immediately contact the authorized officer (AO). Within five working days the AO will inform the operator as to:

- whether the materials appear eligible for the National Register of Historic Places
- the mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not necessary)
- a timeframe for the AO to complete an expedited review under 36 CFR 800-11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate.

If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation cost. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction.

5. Pursuant to 43 CFR 10.4(g) the holder of this authorization must notify the AO, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the authorized officer.

INVASIVE, NON-NATIVE SPECIES

Affected Environment: The invasive alien cheatgrass (*Bromus tectorum*) is present throughout the project area primarily along county roads, aggressively colonizing disturbed non revegetated areas. The problem weed mullein (*Verbascum thapsus*) is also present in the area, primarily scattered in drainages and slopes where there have been past earthen disturbances.

Environmental Consequences of the Proposed Action: The proposed action will create significant areas of earthen disturbance which, if they are not promptly revegetated, will provide safe sites for the establishment and proliferation of both cheatgrass and noxious weeds.

Environmental Consequences of the No Action Alternative: There will be no change from the present situation.

Mitigation: Promptly recontour and revegetate all disturbed areas with Native Seed mix #3. The project applicant will be responsible for eradicating cheatgrass and noxious and problem weeds should they occur as a result of the proposed action. The applicant will use materials and methods authorized in advance by the White River Field Manager.

MIGRATORY BIRDS

Affected Environment: An array of migratory birds fulfill nesting functions in the project area's predominantly pinyon-juniper woodlands from late May through early August. Species associated with these woodland communities are typical and widely represented in the Resource Area and region. Those bird populations identified as having higher conservation interest (i.e., Rocky Mountain Bird Observatory, Partners in Flight program) include gray flycatcher, pinyon jay, juniper titmouse, black-throated gray warbler, and violet-green swallow. These birds, too, are well distributed at appropriate densities in this Resource Area's extensive woodland habitats.

Environmental Consequences of the Proposed Action: Project construction would be initiated in November 2004 with a completion date that would vary depending on well testing

timeframes and the number of wells ultimately required for testing. The construction, equipping and initial testing of the first 3 to 4 wells would be completed prior to breeding birds returning to these habitats. Heavy equipment use and high levels of activity associated with these sites would have no reasonable potential to disrupt the nesting activities of migratory birds. One daily vehicle trip into each site through the 2005-2007 nesting seasons would not be expected to disrupt ongoing nesting by birds that may situate nests in closer proximity to the access road.

In the event all wells are required, construction activity associated with 1 well would likely coincide with the 2005 nesting season. Depending on the site (i.e., well 17 or 18) from 2 to 4 acres of direct habitat involvement and an additional 15 to 35 acres of pinyon-juniper habitat may be indirectly affected by activity. Based on local breeding bird inventory data and the assumption that half the birds within 100 feet of surface use could be adversely influenced, disturbance attributable to these wells would, on average, have potential to influence 5-10 pairs of birds with higher conservation interest in 2005. This temporary effect would have no discernible influence on the abundance of local breeding bird populations nor the viability of any breeding bird population affiliated with the pinyon-juniper type at any landscape scale. Subsequent monitoring activity would not be expected to have adversely affect nesting outcomes.

Environmental Consequences of the No Action Alternative: There would be no action authorized that would have potential to disrupt the breeding activities of migratory birds.

Mitigation: See Terrestrial Wildlife section.

THREATENED, ENDANGERED, AND SENSITIVE PLANT SPECIES (includes a finding on Standard 4)

Affected Environment: The rare plants that occur within the Piceance Basin depend on relatively barren shale habitats of the Green River Formation. Of particular interest is an exposure of the Thirteen Mile Creek Tongue of the Green River Formation. This outcropping parallels the valley slopes of Yellow Creek and Piceance Creek and their tributaries. Two threatened plants, the Dudley Bluffs Bladderpod (*Lesquerella congesta*) and the Piceance twinpod (*Physaria obcordata*), are known to occur on this formation. Documented occurrences of the Dudley Bluffs bladderpod are located in Yellow Creek above its confluence with Duck Creek approximately 4-5 miles from the project site. A pedestrian survey was conducted by WestWater Engineering and no plants were found within the project scope.

Environmental Consequences of the Proposed Action: During the pedestrian survey which was conducted by WestWater Engineering, no Threatened, Endangered, and sensitive plant species were found.

Environmental Consequences of the No Action Alternative: None

Mitigation: None.

Finding on the Public Land Health Standard for Threatened & Endangered species:
There is no reasonable likelihood that the proposed action or no action alternative would have an influence on the condition or function of Threatened, Endangered, or Sensitive plant species. Thus there would be no effect on achieving the land health standard.

WASTES, HAZARDOUS OR SOLID

Affected Environment: There are no known hazardous or other solid wastes on the subject lands. No hazardous materials are known to have been used, stored or disposed of at sites included in the project area.

Environmental Consequences of the Proposed Action: No listed or extremely hazardous materials in excess of threshold quantities are proposed for use in this project. While commercial preparations of fuels and lubricants proposed for use may contain some hazardous constituents, they would be stored, used and transported in a manner consistent with applicable laws, and the generation of hazardous wastes would not be anticipated. Solid wastes would be properly disposed of.

Environmental Consequences of the No Action Alternative: No hazardous or other solid wastes would be generated under the no-action alternative.

Mitigation: The operator shall be required to collect and properly dispose of any solid wastes generated by the proposed actions.

WATER QUALITY, SURFACE AND GROUND (includes a finding on Standard 5)

Affected Environment: The proposed action is in Corral Gulch and Stake Springs Gulch both tributary to Yellow Creek and the White River. The State has identified these drainages in segment 13b, which is the mainstem of Yellow Creek, including all tributaries from the source to the confluence with the White River. The table below identifies the wells to the appropriate drainages.

Well Number	Drainage
4-1-299	Corral Gulch
17-36-199	
15-31-198	
14-31-198	
16-31-198	
18-6-298	Stake Springs Gulch

A review of the Colorado's 1989 Nonpoint Source Assessment Report (plus updates), the 305(b) report, the 303(d) list and the Unified Watershed Assessment was done to see if any water quality concerns have been identified. The State has designated this segment as "Use Protected". They further classified this stream segment as Warm Aquatic Life 2, Recreation 2, and Agriculture. The state has further defined water quality parameters with table values. These standards reflect the ambient water quality and define maximum allowable concentrations for the

various water quality parameters. The anti-degradation rule does not apply to segments that are considered to be use protected. For these drainages, on the parameters listed in the table apply.

Surface water quantity and quality data has been collected by the US Geological Survey, Water Resource Division for two stations on Corral Gulch and at the mouth of Yellow Creek since the late 1970's. The data represents baseline conditions for these drainages and indicates the quality of the water to be well within the limits set by the State. The annual reports are available for review at the White River FO.

Environmental Consequences of the Proposed Action: Problems that could arise from surface disturbing activities would be an increase in salt and sediment transport. Annual runoff from this watershed is dynamic and dependent on some aspects we control, such as the amount of vegetation retained for watershed protection and vegetation density. Depleting the vegetation cover needed to protect watersheds from raindrop impact and runoff could cause short-term erosion problems and increased sedimentation to Yellow Creek and on down to the White River. The proposed action is to last a maximum three years after which time it is recommended to have the roads and pads reclaimed (see wildlife section) to a pre construction landscape. With implementation of this mitigation, impacts are expected to be short term.

Environmental Consequences of the No Action Alternative: Impacts from the no-action alternative are not anticipated.

Mitigation: No additional mitigation is recommended.

Finding on the Public Land Health Standard for water quality: The proposed action will not affect water quality or achievement of the Land Health Standard.

CRITICAL ELEMENTS NOT PRESENT OR NOT AFFECTED:

No ACEC's, flood plains, riparian or wetland systems, prime and unique farmlands, wild and scenic rivers, threatened, endangered or sensitive animal species exist within the area affected by the proposed action. Furthermore, there is no reasonable likelihood that the proposed action or no action alternative would have an influence on whether riparian or wetland habitats would meet the Public Land Health Standard. For threatened, endangered and sensitive animal species Public Land Health Standard is not applicable since neither the proposed nor the no-action alternative would have any influence on populations of, or habitats potentially occupied by, special status animals. There are also no Native American religious or environmental justice concerns associated with the proposed action.

NON-CRITICAL ELEMENTS

The following elements **must** be addressed due to the involvement of Standards for Public Land Health:

SOILS (includes a finding on Standard 1)

Affected Environment: Baseline soils data have been collected for Rio Blanco County by the NRCS and are published in an order III Soil Survey. This survey is available for review from the White River Field Office. The table below identifies the soils encountered by the proposed action with corresponding soil characteristics.

Proposed Action	Soil Number	Soil Name	Slope	Range site	Salinity	Runoff	Erosion Potential	Bedrock
18-6-298 road	36	Glendive fine sandy loam	--	Foothills Swale	2-4	Slow	Slight	>60
Wells 4-1-299, 15-31-198, 18-6-298	70	Redcreek-Rentsac complex	5-30%	PJ woodlands/PJ woodlands	<2	Very high	Moderate to high	10-20
Wells 17-36-199, 14-31-198	73	Rentsac channery loam	5-50%	Pinyon-Juniper woodlands	<2	Rapid	Moderate to very high	10-20

Revegetation limitations for these soil types include an arid climate and droughty soil condition. None of these areas have any special delineation assigned to the soils encountered by the proposed action.

Environmental Consequences of the Proposed Action: General impacts associated with exploration and road development include but are not limited to, loss of topsoil, soil compaction and possible increase in sediment loads to Yellow Creek and the White River. The primary surface-disturbing impact would be a potential increase in sediment transport from runoff events after the protective vegetative cover has been removed.

BMPs used to slow runoff, trap sediment and prepare reclaimed areas for seeding would help reduce soil loss. With implementation of BMPs impacts are expected to be short in duration, during the construction phase and for a short time after construction until successful reclamation is achieved.

Environmental Consequences of the No Action Alternative: Impacts are not anticipated from not permitting the proposed action.

Mitigation: Apply COA #98 from Appendix B, White River ROD/RMP. When erosion is anticipated, sediment barriers shall be constructed to slow runoff, allow deposition of sediment, and prevent it from leaving the site. In addition, straining or filtration mechanisms may also contribute to sediment removal from runoff.

Finding on the Public Land Health Standard for upland soils: The proposed action will have no effect on the soils' ability to meet the land health standard.

VEGETATION (includes a finding on Standard 3)

Affected Environment: The project area is dominated by mature pinyon- juniper woodlands interspersed occasionally with Wyoming big sagebrush parks. These woodlands typically have a fairly sparse herbaceous understory.

Environmental Consequences of the Proposed Action: The proposed action will disturb 3.57 miles and 7.3 acres of plant communities that previously have had little disturbance other than that create by wild and domestic herbivores. The principal negative impact to the affected plant communities will be fragmentation as a result of well pad and access road construction.

Environmental Consequences of the No Action Alternative: There will be no change from the present situation of relatively undisturbed plant communities in the immediate project area.

Mitigation: Promptly recontour and revegetate all disturbed areas with Native Seed mix #3. Seeding rates are PLS (Pure Live Seed) and apply to drill seeding. For broadcast application double seeding rate and then harrow to insure seed coverage. The project applicant will be responsible for eradicating cheatgrass and noxious and problem weeds should they occur as a result of the proposed action. The applicant will use materials and methods authorized in advance by the White River Field Manager.

Native Seed Mix # 3 lbs/PLS		
Western wheatgrass (Rosanna)	2	Gravelly 10"-14",
Bluebunch wheatgrass (Secar)	2	Pinyon/Juniper
Thickspike wheatgrass (Critana)	2	Woodland, Stony
Indian ricegrass (Rimrock)	1	Foothills, 147
Fourwing saltbush (Wytana)	1	(Mountain
Utah sweetvetch	.5	Mahogany)
Alternates: Needle and thread, globemallow		

Finding on the Public Land Health Standard for plant and animal communities (partial, see also Wildlife, Aquatic and Wildlife, Terrestrial): Upland plant communities in the project area currently meet the Standard and will be expected to continue to meet it in the future with implementation of the proposed action.

WILDLIFE, TERRESTRIAL (includes a finding on Standard 3)

Affected Environment: The proposed project area is encompassed by the general winter ranges of deer and elk. These ranges are generally occupied by the largest number of animals from October through January and April through early May. Current road density in the immediate project area is a minimum 2.2 miles per square mile. Up to 3 miles of new access would be required for these wells. All the Wolf Ridge sites (pads 14-17) are situated on gentle ridgeline crests that are presently unroaded. The #18 well lies adjacent to an existing ridgeline road, but a new route must be constructed since existing grades cannot be negotiated by the drilling equipment.

The area potentially influenced by the proposed action was surveyed for woodland nesting raptors during the 2004 nesting season. One active Cooper's hawk nest was found about 500' lateral and below a ridgeline access route to the #15 well. Other small mammals and birds using this area are typical and widely distributed in extensive like habitats across the Resource Area and northwest Colorado; there are no narrowly endemic or highly specialized species known to inhabit those lands potentially influenced by this action.

Environmental Consequences of the Proposed Action: Big game impacts associated with unregulated vehicle use (i.e., behavioral avoidance and habitat disuse; increased energetic demands during critical timeframes) received prominent address in the White River ROD/RMP. To stabilize open road density and its influence on big game physiology and habitat utility, an effective road density objective of ≤ 3 miles per square mile was established in the RMP on big game winter ranges. Without access control, proposed access would impinge substantially on a 1500-acre parcel of unroaded winter range and increase open road densities in the project area by about 20% to a minimum 2.6 miles per square mile--adding cumulatively to the road network that will ultimately attend further oil and gas development on Piceance Basin's winter ranges. In an effort to reduce road proliferation and minimize the intensity and frequency of road use it is recommended that gates and fencing be used on each of the 3 road segments. Restricting vehicle use to that associated only with hydrologic monitoring (i.e., 1 daily) would substantially reduce vehicle-related effects to big game. In an effort to deter subsequent vehicle use after hydrologic monitoring is complete, it is recommended that large woody debris cleared from the Wolf Ridge access routes be retained on-site to be evenly redistributed on the access at the completion of monitoring and reclamation. Recontouring the access route to original grade on pad 18 would be sufficient to prevent further vehicle use.

Pad/access construction and drilling operations on the #15 pad would be completed prior to Cooper's hawks returning to breeding territories. A single vehicle trip per day on a ridgeline situation and separated from the known nest site by 500 feet of intervening woodland is not expected to have any adverse consequence on hawk nest site selection or attendance. Access road construction is intended to be designed to avoid the removal of larger, more mature canopy components and reduce long-term alterations of woodland canopy character to insignificant proportions. Recommended access restrictions would reduce the intensity and frequency of vehicle use and prevent continued expansion of road networks through these woodland types.

Woodland canopies would be altered in a narrow (about 20-foot wide) linear pattern on up to 7 acres of pinyon-juniper habitat. Access routing objectives established during project on-sites prioritizes the clearing of submature trees, regeneration, and large woody debris and would substantially reduce long term changes in woodland character such that mature woodland habitats (and the species that depend on them) would remain essentially unaffected in the long term.

Environmental Consequences of the No Action Alternative: There would be no action authorized that would have potential to disrupt the breeding activities of migratory birds.

Mitigation: To minimize the intensity and frequency of vehicle use on these newly constructed access roads it is recommended that fencing be strategically placed to effectively

preclude use of these roads by vehicles not associated with hydrologic monitoring. Fence locations shall be coordinated with the BLM through the Authorized Officer. It is intended that gates be locked at all times over the course of monitoring. In an effort to eliminate these temporary access roads after their intended use, it is recommended that, after appropriate reclamation, woody material cleared from the right-of-way and available adjacent to the right-of-way be redistributed in a manner that effectively deters subsequent vehicle use.

Finding on the Public Land Health Standard for plant and animal communities (partial, see also Vegetation and Wildlife, Aquatic): The landscapes associated with the proposed action currently meet the land health standards for terrestrial wildlife communities. Access road clearing associated with the proposed action would remove a modest amount of woodland cover in the long term (i.e., a narrow linear ridgeline feature totaling about 7 acres), but given construction objectives discussed during on-sites to minimize the involvement of more mature elements of the woodland community, the action would not detract appreciably from current woodland character or function. Subsequent reclamation of these disturbed areas with a native seed mixture would be consistent with continued meeting of the land health standards for terrestrial game and nongame wildlife populations.

Uncontrolled vehicle use and road proliferation that would attend temporary access development on Wolf Ridge would aggravate road-related effects on, most prominently, big game winter range habitats (e.g., elevated energy demands and habitat disuse). Failing to effectively deter subsequent vehicle use, as provided for in proposed mitigation, would reduce the present utility of big game winter ranges in the long term. This effect would represent an avoidable landscape-scale modification that is inconsistent with maintaining the land health standard for animals (e.g., maintaining animal density in balance with habitat/landscape potential and exhibiting resilience to human activities).

The no-action alternative would have no influence on the continued meeting of the land health standard for animals.

OTHER NON-CRITICAL ELEMENTS: For the following elements, only those brought forward for analysis will be addressed further.

Non-Critical Element	NA or Not Present	Applicable or Present, No Impact	Applicable & Present and Brought Forward for Analysis
Access and Transportation			X
Cadastral Survey	X		
Fire Management			X
Forest Management			X
Geology and Minerals			X
Hydrology/Water Rights	X		
Law Enforcement	X	X	
Paleontology			X
Rangeland Management			X

Non-Critical Element	NA or Not Present	Applicable or Present, No Impact	Applicable & Present and Brought Forward for Analysis
Realty Authorizations			X
Recreation			X
Socio-Economics		X	
Visual Resources			X
Wild Horses			X

ACCESS AND TRANSPORTATION

Affected Environment: BLM 1187 roads and BLM 1189 as well as Rio Blanco County Roads RBC 91 and 24 will be affected by the proposed action. In addition 3.57 miles of new road will be constructed. The project area is within an area defined as “open seasonally” in the White River Resource Area RMP of 1997. The area is open to cross country travel from May 1 to September 30 and closed to cross country travel the remainder of the year.

Environmental Consequences of the Proposed Action: An increase in traffic along BLM roads 1187 and 1189 as well as Rio Blanco County Roads 91 and 24 can be expected while wells are in operation. Road surfaces may be impacted with an influx of heavy truck traffic during pad and road construction.

Environmental Consequences of the No Action Alternative: None.

Mitigation: None

FIRE MANAGEMENT

Affected Environment: The 17-36-199, 15-31-198, 14-31-198, 18-6-298 wells proposed involve, approximately 3.57 miles of new road construction and about 7.3 acres of drill pad clearing for an approximate total of 22.4 acres of disturbance in pinyon/juniper woodland with a woody fuel load of approximately 16.5 tons per acre.

The National Fire Plan calls for “firefighter and public safety” to be the highest priority for all fire management activities. In the pinion, juniper, and brush types common on the White River Resource Area, roads and other man-made openings are commonly used as fuel breaks or barriers to control the spread of both wildland and prescribed fires. By reducing the activity fuels created from this proposal, future fire management efforts in this area should be safer for those involved and more effective.

Environmental Consequences of the Proposed Action: This proposed action involves the removal of approximately 370 tons of woody material. Due to the existing tree cover of pinion and juniper, there will be a need for the operator to clear these trees. If not adequately treated, these trees will result in elevated hazardous fuels conditions and remain on-site for many years. These accumulations of dead material are very receptive to fire brands and spotting from wind

driven fires and can greatly accelerate the rate of spread of the fire front. The road(s) associated with this project may be used by the general public for a variety of uses, including access for fire wood gathering, hunting and other dispersed recreational activities. Increased public use of an area will nearly always result in an increased potential for man-caused wildland fires. If not treated the slash and woody debris will create an elevated hazardous dead fuel loading which could pose significant control problems in the event of a wildfire. Additionally there would be greater threat to public, operator personnel, and fire suppression personnel.

Environmental Consequences of the No Action Alternative: There would be no tree removal or disturbance to cause significant dead fuel loading.

Mitigation: Concurrence with mitigation contained in the Terrestrial Wildlife section above.

FOREST MANAGEMENT

Affected Environment: Four of the five wells are located within Pinyon/Juniper woodlands. These woodlands are evenly composed of pinyon and Utah juniper. These stands are considered as commercial and removal will be considered within the decadal allowable harvest level for the Piceance Geographic Reference Area. Immediately above the proposed project there has been several commercial forest product sales.

Environmental Consequences of the Proposed Action: Pinyon and juniper would be removed as a result of the proposed action. The acres of woodland involved are shown in the chart below. Following reclamation pinyon and juniper would invade the site. Initial invasion would occur within 30 years. A mature woodland would develop in 150 to 300 years.

Woodland acres

Well Number	Well Pad Acres	Access Road Acres
15-31-194H	1.2	1.4
14-31-198H	1.2	
16-31-198H	0	0
17-36-199H	1.2	2.3
18-6-298H	1.2	.72
Total	4.8	4.42

Environmental Consequences of the No Action Alternative: There would be no impacts to woodlands.

Mitigation: Concurrence with mitigation contained in the Terrestrial Wildlife/Fire Management section above. This is in accordance with the White River RMP of 1997.

GEOLOGY AND MINERALS

Affected Environment: The surface geology of all the wells is Uinta Formation. All of the wells will penetrate the oil shale zones including the Mahogany Zone (R-7) in Parachute

creek member of the Green River Formation into the R-0. Aquifers encountered include the A-groove and B-groove dissolution surface. There is potential for a perched aquifer above the A-groove in the Uinta formation and there is potential for very poor quality water near the base of the R-6 and top of L-5. These wells are in an area identified in the ROD/RMP as available for oil shale leasing. There are also located on federal oil and gas lease COC-060738, COC-064204, COC-064841, and COC-060734.

Environmental Consequences of the Proposed Action: If the wells are not completed properly, plugged properly, or is left as an open hole for a period of time there is potential for cross-aquifer contamination. There is also potential for aquifer contamination with drilling fluids if loss circulation occurs during drilling.

Environmental Consequences of the No Action Alternative: Additional knowledge of the oil shale zones and the related hydrologic resources in the area will not occur.

Mitigation: All information and drilling records for each well must be submitted to the White River Field Office. This includes, but is not limited to, water quality data for each zone, all geologic and electric logs, and well completion reports. To prevent cross-aquifer contamination, the isolation cementing during plugging of the core holes should also include cement plug between the top of the A-groove and the base of Uinta formation. The hydrology wells and core holes converted to hydrology wells need to be completed in one and only one zone.

PALEONTOLOGY

Affected Environment: The proposed well pads and access roads are in an area mapped as the Uinta Formation (Tweto 1979) which has been classified by the BLM as a Category I formation meaning it is a known producer of fossils of scientific interest.

Environmental Consequences of the Proposed Action: If it should become necessary to excavate into the underlying bedrock to construct access roads, level well pads or excavate reserve/water pits there is the potential to impact scientifically important fossil resources.

Environmental Consequences of the No Action Alternative: There would be no new impacts to fossil resources under the No Action Alternative.

Mitigation: 1) If at any time it becomes necessary to excavate into the underlying bedrock formation to construct access roads, level well pads or excavate water/reserve pits a paleontological monitor shall be present.

2) If paleontological materials (fossils) are uncovered during project activities, the operator is to immediately stop activities that might further disturb such materials, and contact the authorized officer (AO). The operator and the authorized officer will consult and determine the best option for avoiding or mitigating paleontological site damage.

RANGELAND MANAGEMENT

Affected Environment: Five of the six proposed locations and associated access occur in Pasture C, Square S (06027). This allotment used as a transitional pasture between the spring fall and winter ranges and the Square S Summer Range. The remaining location and access (18-6-298H) occurs on the Reagle allotment (06026) in the Stake Springs pasture which is used in the spring and fall.

Environmental Consequences of the Proposed Action: The proposed action will impact rangeland management by creating breaks in the allotment boundary fence which would allow cattle to stray between pastures. By implementing mitigation such as the installation of a cattleguard where the proposed access crosses the allotment boundary fence the integrity of the allotment boundary fence would be maintained. Therefore, with implementation of the mitigation listed below impacts to rangeland management would be minimized.

Environmental Consequences of the No Action Alternative: There will be no change from the present situation.

Mitigation: Implementation of the proposed action will require installation of a cattleguard where the proposed access for well 18-6-298H crosses the allotment boundary fence just east of RBC Rd 91 (SWNW Sec 6 T 2S R 98 W) so that integrity of the allotment boundary fence is maintained. All fence, gate or cattleguard work will meet BLM specifications.

Promptly recontour and revegetate all disturbed areas with Native Seed Mixture #3; see vegetation mitigation for the specific seeds.

REALTY AUTHORIZATIONS

Affected Environment: The subject lands are public in surface and mineral estates. They are encumbered by rights-of-way for roads, powerlines, and natural gas pipelines. The pipelines are high pressure transmission lines that are buried.

Environmental Consequences of the Proposed Action: Excavation activities could result in ruptured natural gas pipelines. This could represent a serious health and safety issue.

Environmental Consequences of the No Action Alternative: None

Mitigation: “One Call” procedures must be utilized in order to locate all buried facilities prior to excavation taking place.

RECREATION

Affected Environment: The proposed action occurs within the White River Extensive Recreation Management Area (ERMA). BLM custodially manages the ERMA to provide for unstructured recreation activities such as hunting, dispersed camping, hiking, horseback riding, wildlife viewing and off-highway vehicle use.

Pad 18-6-298 is located in an area has been delineated a Recreation Opportunity Spectrum (ROS) class of Semi-Primitive Motorized (SPM). SPM recreation setting is typically characterized by a natural appearing environment with few administrative controls, low interaction between users but evidence of other users may be present. SPM recreation experience is characterized by a high probability of isolation from the sights and sounds of humans that offers an environment that offers challenge and risk. The remainder of the pads and roads are located within areas that have been identified as Roaded Natural (RN) ROS class. RN class is similar to SPM with the exception of an decrease in natural surrounding coupled with an increase in the probability of interactions of users.

Environmental Consequences of the Proposed Action: The public will directly lose approximately 23 acres of dispersed recreation potential while wells are in operation. The public will most likely not recreate in the vicinity of these facilities and will be dispersed elsewhere. If action coincides with hunting seasons (September through November) it will most likely disrupt the experience sought by those recreationists.

With the introduction of new well pads and roads, an increase of traffic could be expected increasing the likelihood of human interactions, the sights and sounds associated with the human environment and a less naturally appearing environment.

Environmental Consequences of the No Action Alternative: No loss of dispersed recreation potential and no impact to hunting recreationists.

Mitigation: None.

VISUAL RESOURCES

Affected Environment: The proposed actions are located in an area with a VRM III classification. The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Environmental Consequences of the Proposed Action: The proposed well pads are located in Pinyon/Juniper stands on ridge lines above and out of sight of routes (RBC 24 & 91) that would be traveled by a casual observer. By painting all structures or facilities needed for monitoring Juniper Green, the level of change to the characteristic landscape would be low, and the objectives of the VRM III classification would be retained.

Environmental Consequences of the No Action Alternative: There would be no additional environmental consequences.

Mitigation: Paint all facilities on the locations Juniper Green.

WILD HORSES

Affected Environment: The proposed project is located in the Square S Pasture of the Piceance-East Douglas wild horse herd management area (HMA), in a location relied upon year-long by a resident population of wild horses. Horses concentrate in and in close proximity to the pinyon/juniper stands during inclement weather, and graze this pasture on a widespread basis during the spring, summer and fall.

Environmental Consequences of the Proposed Action: An unknown number of wild horse bands would be temporarily displaced during construction of the road and pipeline. The displacement is not expected to be permanent. Horses would have the opportunity to travel outside the boundaries of the HMA should any portion of the boundary fence located in the project area be lowered or removed.

Environmental Consequences of the No Action Alternative: There would be no change from the present situation.

Mitigation: Fence must be maintained throughout the project in a fashion that assures wild horses cannot escape from their management area. HMA boundary gates in the project area will be kept in good repair and will remain closed.

CUMULATIVE IMPACTS SUMMARY: An additional 22.4 acres of land will be disturbed in the Piceance Basin, over and above that previously disturbed for similar uses (approximately 5 acres). This disturbance is essentially the same as that discussed for the development of oil and gas wells, but will much shorter in duration. The cumulative impacts of such disturbance are addressed in the White River RMP/EIS. Partial reclamation will take place within one year, and will cover most of each site (there is less need for infrastructure than with a gas well). This action would not affect the applicability of the reasonable foreseeable development scenario for oil and gas.

REFERENCES CITED

- Conner, Carl E, Curtis Martin, Barbara Davenport and Jim Conner
2004 2004 Coring Project Piceance Basin Study: A Class III Cultural Resources Inventory of Five Proposed Drill Holes and Related Access Routes in Rio Blanco County, Colorado, For Shell Frontier Oil and Gas. Grand River Institute, Grand Junction, Colorado.

Tweto, Ogden

1979 Geologic Map of Colorado. United States Geologic Survey, Department of the Interior, Reston, Virginia.

PERSONS / AGENCIES CONSULTED: None

INTERDISCIPLINARY REVIEW:

Name	Title	Area of Responsibility
Caroline Hollowed	P & EC	Air Quality
Tamara Meagley	NRS	Areas of Critical Environmental Concern
Tamara Meagley	NRS	Threatened and Endangered Plant Species
Michael Selle	Archaeologist	Cultural Resources Paleontological Resources
Mark Hafkenschiel	Range Conservationist	Invasive, Non-Native Species
Ed Hollowed	Wildlife Biologist	Migratory Birds
Ed Hollowed	Wildlife Biologist	Threatened, Endangered and Sensitive Animal Species, Wildlife
Bo Brown	Hazmat Collateral	Wastes, Hazardous or Solid
Caroline Hollowed	P & EC	Water Quality, Surface and Ground Hydrology and Water Rights
Ed Hollowed	Wildlife Biologist	Wetlands and Riparian Zones
Chris Ham	ORP	Wilderness
Caroline Hollowed	P & EC	Soils
Mark Hafkenschiel	Range Conservationist	Vegetation
Ed Hollowed	Wildlife Biologist	Wildlife Terrestrial and Aquatic
Chris Ham	ORP	Access and Transportation
Ken Holsinger	NRS	Fire Management
Robert Fowler	Forester	Forest Management
Paul Daggett	Mining Engineer	Geology and Minerals
Mark Hafkenschiel	Range Conservationist	Rangeland Management
Vern Rholl	Non-Renewable Supervisor	Realty Authorizations
Chris Ham	ORP	Recreation
Keith Whitaker	NRS	Visual Resources
Valerie Dobrich	NRS	Wild Horses

Finding of No Significant Impact/Decision Record (FONSI/DR)

CO-110-2004-184-EA

FINDING OF NO SIGNIFICANT IMPACT (FONSI)/RATIONALE: The environmental assessment and analyzing the environmental effects of the proposed action have been reviewed. The approved mitigation measures (listed below) result in a Finding of No Significant Impact on the human environment. Therefore, an environmental impact statement is not necessary to further analyze the environmental effects of the proposed action.

DECISION/RATIONALE: It is my decision to approve the proposed action as identified in the above environmental assessment. The term will be three years, and rent will be required. This action is in conformance with the White River RMP, and would provide valuable information on the public resources located in the Piceance Basin

MITIGATION MEASURES:

1. All underground facilities shall be avoided. "One Call" procedures shall be utilized in order to locate all buried facilities prior to excavation taking place.
2. To minimize the intensity and frequency of vehicle use on newly constructed access roads, fencing shall be strategically placed to effectively preclude use of these roads by vehicles not associated with hydrologic monitoring. Fence locations shall be coordinated with the BLM through the Authorized Officer. Gates shall be locked at all times over the course of monitoring. In an effort to eliminate these temporary access roads after their intended use, they shall be reclaimed, and woody material cleared from the right-of-way and available adjacent to the right-of-way shall be redistributed in a manner that effectively deters subsequent vehicle use.
3. Water shall be spread on the road surfaces to control fugitive dust and to help minimize short-term air quality impacts.
4. On the access road to wells 16-31-198H, 14-31-198H and 15-31-198H, sites 5RB 125, 124 and 4801 shall be monitored during the construction process to ensure that subsurface features are not overlooked given the uncertainty in the inventory report regarding whether there is sufficient soil depth for buried remains. Site 5RB 4801 must be avoided by a minimum of 50 feet or a comprehensive testing program to determine eligibility must be undertaken, and any mitigation if necessary prior to the construction of the road.
5. On the access road from well pad 4-1-299 (2-2-299) to well pad 17-36-199H, site 5RB 4647 shall be avoided in its entirety, and no impacts to that site shall be allowed. Due to the

significant expansion of the site boundaries of site 5RB 538 and the uncertainty as to whether subsurface remains are present based on findings of artifacts in ant hills all construction near the site shall be monitored.

6. On well pad 17-36-199H, all disturbance shall avoid site 5RB 4802 by at least 100 feet.

7. The operator is responsible for informing all persons who are associated with the project operations that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during any project or construction activities, the operator is to immediately stop activities in the immediate area of the find that might further disturb such materials, and immediately contact the authorized officer (AO). Within five working days the AO will inform the operator as to:

- whether the materials appear eligible for the National Register of Historic Places
- the mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not necessary)
- a timeframe for the AO to complete an expedited review under 36 CFR 800-11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate.

If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation cost. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction.

8. Pursuant to 43 CFR 10.4(g) the holder of this authorization must notify the AO, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the authorized officer.

9. The operator shall be required to collect and properly dispose of any solid wastes generated by the proposed actions.

10. The permittee shall promptly recontour and revegetate all disturbed areas with the following seed mix. Seeding rates are PLS (Pure Live Seed) and apply to drill seeding. For broadcast application double seeding rate and then harrow to insure seed coverage. The permittee is responsible for eradicating cheatgrass and noxious and problem weeds should they occur as a result of the permitted action. The permittee shall use materials and methods authorized in advance by the White River Field Manager.

Native Seed Mix # 3 lbs/PLS		
Western wheatgrass (Rosanna)	2	Gravelly 10"-14",

Native Seed Mix # 3 lbs/PLS		
Bluebunch wheatgrass (Secar)	2	Pinyon/Juniper
Thickspike wheatgrass (Critana)	2	Woodland, Stony
Indian ricegrass (Rimrock)	1	Foothills, 147
Fourwing saltbush (Wytana)	1	(Mountain
Utah sweetvetch	.5	Mahogany)
Alternates: Needle and thread, globemallow		

11. All information and drilling records for each well shall be submitted to the White River Field Office. This includes, but is not limited to, water quality data for each zone, all geologic and electric logs, and well completion reports. To prevent cross-aquifer contamination, the isolation cementing during plugging of the core holes shall also include cement plug between the top of the A-groove and the base of Uinta formation. The hydrology wells and core holes converted to hydrology wells shall be completed in one and only one zone.

12. If at any time it becomes necessary to excavate into the underlying bedrock formation to construct access roads, level well pads or excavate water/reserve pits a paleontological monitor shall be present.

13. If paleontological materials (fossils) are uncovered during project activities, the operator is to immediately stop activities that might further disturb such materials, and contact the authorized officer (AO). The operator and the authorized officer will consult and determine the best option for avoiding or mitigating paleontological site damage.

14. A cattleguard shall be installed where the proposed access for well 18-6-298H crosses the allotment boundary fence just east of RBC Rd 91 (SWNW Sec 6 T 2S R 98 W) so that integrity of the allotment boundary fence is maintained. All fence, gate or cattleguard work shall meet BLM specifications.

15. All permanent aboveground facilities on the locations shall be painted Juniper Green.

16. All existing fences must be maintained throughout the project in a fashion that assures wild horses cannot escape from their management area. HMA boundary gates in the project area shall be kept in good repair and remain closed.

17. Apply COA #98 from Appendix B, White River ROD/RMP. When erosion is anticipated, sediment barriers shall be constructed to slow runoff, allow deposition of sediment, and prevent it from leaving the site. In addition, straining or filtration mechanisms may also contribute to sediment removal from runoff.

COMPLIANCE/MONITORING: Compliance shall be monitored during construction and on a random and periodic basis during use.

NAME OF PREPARER: Linda Jones

NAME OF ENVIRONMENTAL COORDINATOR: Carol Hollowed

SIGNATURE OF AUTHORIZED OFFICIAL: Kent C. Watten
Field Manager

DATE SIGNED: 11/12/04

ATTACHMENTS: Location map of the proposed action.

Land Status

-  BLM
-  National Park Service
-  USDA Forest Service
-  Colorado State
-  Colorado State DOI

